

LARGE DIAMETER HOLLOW PRESTRESSED DRIVEN PILES

There is limited information for the design of spiral reinforcement of hollow driven prestressed piles. In practice, steel spiral areas of 0.2% have been used in non-seismic areas.

Due to the large compressive forces at the head and tip of hollow core piles during driving, longitudinal cracking in these areas may occur. To minimize this longitudinal cracking, the following minimum percentage of spiral reinforcement is recommended:

Two diameters from top and tip of pile	1.2%
Remainder of pile	0.8%

The above percentage is the ratio of volume of spiral reinforcement to the volume of the pile shell concrete and can be determined by:

$$P = \frac{A_s}{ts}$$

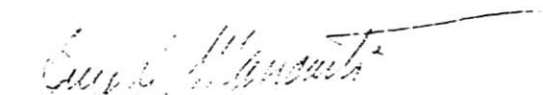
where A_s is the cross sectional area of the spiral reinforcement in square inches, t is the thickness of the pile wall in inches, and s is the spiral spacing in inches.

A hollow pile is vulnerable to inward bursting forces in plastic hinging zones. Upon installation, the material within the core is to be removed and the core filled with Class "A" concrete in those zones where plastic hinging due to seismic loading is expected to occur.

For a general reference on this subject "*Construction of Prestressed Concrete Structures*", by Ben C. Gerwick, Jr., published in 1971 by Wiley-Interscience is available through the Transportation Library.



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Attachment(s)

Supersedes Memo to Designers 3-6 dated October 1978